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09/991,108

11/16/2001

Michael Burrows

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EXAMINER

CHAI, LONGBIT

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/991,108

Applicant(s)

BURROWS ET AL.

Examiner

Longbit Chai

Art Unit

2131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-7,9-22,24-36,39,40 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-22,24-36,39,40 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1 – 63 have been presented for examination. Claim 2, 8, 18, 19, 23, 37, 38, 42, 43 and 45 – 63 have been cancelled and claims 1, 22 and 44 have been amended in an amendment filed 8/21/2006. The amendment filed have been entered and made of record. Presently, pending claims are 1, 3 – 7, 9 – 22, 24 – 36, 39, 40 and 44.

### ***Response to Arguments***

2. Applicant's arguments with respect to the subject matter of the instant claims have been fully considered but are not persuasive.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 6, 9 – 14, 16, 20, 22, 27, 29 – 33, 35 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Bare (U.S. Patent 6389532).

Art Unit: 2131

As per claim 1 and 22, Bare teaches a method for limiting the impact of undesirable behavior of computers on a network through which packets of data are interchanged between the computers, comprising:

monitoring the network for any patterns of behavior (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7 and Column 12 Line 52 – 60);

determining, upon discovering that one or more of the patterns of behavior is undesirable, a type of the undesirable pattern of behavior (Bare: Column 12 Line 52 – 60 and Column 4 Line 60 – 63);

determining a proper action for mitigating that type of undesirable behavior, the proper action including preventing dissemination through the network of packets associated with the undesirable behavior and allowing dissemination of packets not associated with the undesirable (Bare: Column 12 Line 56 – 60 and Column 4 Line 60 – 63).

wherein preventing dissemination comprises at least one of changing a routing table, changing a forwarding table, turning off at least one port of a forwarding device, filtering on Internet Protocol (IP) addresses, and filtering on media access control (MAC) addresses (Bare: Column 12 Line 56 – 60 and Column 4 Line 60 – 63).

wherein a discovery, including that of a network topology, facilitates the network monitoring and type of undesirable behavior determination (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7 and Column 12 Line 52 – 60).

As per claim 6 and 27, Bass teaches the undesirable pattern of behavior is any network pathology characterized as a broadcast storm or an address resolution protocol (ARP) fight (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7 and Column 12 Line 52 – 60).

As per claim 29, Bare teaches preventing the dissemination of the undesirable pattern of behavior includes discarding the packets associated with such behavior, isolating any of the computers at which such behavior originates, or isolating any network segments at which such behavior originates (Bare: Column 12 Line 56 – 60 and Column 4 Line 60 – 63).

As per claim 9, Bare teaches wherein the monitoring includes recovering a topology of the network using information obtained through a network management protocol interface (Bare: Column 4 Line 52 – 63).

As per claim 10, Bare does not disclose expressly the network management protocol is the simple network management protocol (SNMP). However, Official Notice is taken that the use of SNMP is one of the most widely used methods in the field for network management protocol.

As per claim 11 and 31, Bare teaches the undesirable pattern of behavior is a broadcast storm, and wherein the monitoring includes learning a topology of the network from a forwarding database or table of a forwarding device in the network

Art Unit: 2131

(Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7, Column 4 Line 52 – 63 and Column 12 Line 52 – 60).

As per claim 12 and 33, Bare teaches the network is a shared data network (Bare: Figure 1).

As per claim 13, 14 and 32, Bare teaches the network is a switched Ethernet network and the forwarding device is a switch (Bare: Column 12 Line 52 – 60).

As per claim 16 and 35, Bare teaches teaches the proper action includes alerting a system administrator about the existence of the undesirable pattern of behavior (Bare: Column 58 Line 1 – 4).

As per claim 20 and 39, Bare teaches understanding the network topology facilitates disablement of ports in forwarding devices that connect to offending computers (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7, Column 4 Line 52 – 63 and Column 12 Line 52 – 60).

As per claim 30, claim 30 encompasses the similar scope as described in claim 9 and 10. Therefore, see same rationale addressed above in rejecting claim 9 and 10.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 7 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al. (U.S. Patent 6389532), in view of Bare (U.S. Patent 6389532).

As per claim 1, Gupta teaches a method for limiting the impact of undesirable behavior of computers on a network through which packets of data are interchanged between the computers, comprising:

monitoring the network for any patterns of behavior (Gupta: Column 7 Line 28 – 38);

determining, upon discovering that one or more of the patterns of behavior is undesirable, a type of the undesirable pattern of behavior (Gupta: Column 7 Line 28 – 38: denial of service attacks);

determining a proper action for mitigating that type of undesirable behavior, the proper action including preventing dissemination through the network of packets associated with the undesirable behavior and allowing dissemination of packets not associated with the undesirable (Gupta: Column 7 Line 39 – 47).

wherein preventing dissemination comprises at least one of changing a routing table, changing a forwarding table, turning off at least one port of a forwarding device, filtering on Internet Protocol (IP) addresses, and filtering on media access control (MAC) addresses (Gupta: Column 7 Line 39 – 47).

However, Gupta does not teach a discovery, including that of a network topology, facilitates the network monitoring and type of undesirable behavior determination.

Bare teaches a discovery, including that of a network topology, facilitates the network monitoring and type of undesirable behavior determination (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7 and Column 12 Line 52 – 60).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Bare within the system of Gupta because (a) Gupta teaches identifying the network undesirable behavior that may cause network failures and (b) Bare teaches providing a mechanism for dynamically managing the topology of a data network to improve the network performance as well as eliminating loops that could lead to broadcast storms essentially crippling network performance and causing network failures (Bare: Column 4 Line 60 – 63).

As per claim 7 and 28, Gupta teaches the undesirable pattern of behavior includes any one or more of a stolen Internet protocol (IP) address, a stolen media access control (MAC) address, a malformed packet, too many packets directed to an overloaded server, too many probe packets directed to a firewall or too many ARP



request packets (Gupta: Column 7 Line 36 – 38: denial of service – i.e. too many packets directed to an overloaded server).

5. Claims 1, 7 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redlich (U.S. Patent 6591306), in view of Bare (U.S. Patent 6389532).

As per claim 1 and 22, Redlich teaches a method for limiting the impact of undesirable behavior of computers on a network through which packets of data are interchanged between the computers, comprising:

monitoring the network for any patterns of behavior (Redlich: Column 18 Line 6 – 15: duplicate IP address);

determining, upon discovering that one or more of the patterns of behavior is undesirable, a type of the undesirable pattern of behavior (Redlich: Column 18 Line 6 – 15);

determining a proper action for mitigating that type of undesirable behavior, the proper action including preventing dissemination through the network of packets associated with the undesirable behavior and allowing dissemination of packets not associated with the undesirable (Redlich: Column 18 Line 6 – 15).

wherein preventing dissemination comprises at least one of changing a routing table, changing a forwarding table, turning off at least one port of a forwarding device, filtering on Internet Protocol (IP) addresses, and filtering on media access control (MAC) addresses (Redlich: Column 18 Line 6 – 15).

Art Unit: 2131

However, Redlich does not teach a discovery, including that of a network topology, facilitates the network monitoring and type of undesirable behavior determination.

Bare teaches a discovery, including that of a network topology, facilitates the network monitoring and type of undesirable behavior determination (Bare: Column 11 Line 42 – 44, Column 12 Line 5 – 7 and Column 12 Line 52 – 60).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Bare within the system of Redlich because (a) Redlich teaches identifying the network undesirable behavior that may cause network failures and (b) Bare teaches providing a mechanism for dynamically managing the topology of a data network to improve the network performance as well as eliminating loops that could lead to broadcast storms essentially crippling network performance and causing network failures (Bare: Column 4 Line 60 – 63).

As per claim 7 and 28, Redlich teaches the undesirable pattern of behavior includes any one or more of a stolen Internet protocol (IP) address, a stolen media access control (MAC) address, a malformed packet, too many packets directed to an overloaded server, too many probe packets directed to a firewall or too many ARP request packets (Redlich: Column 18 Line 6 – 15: a stolen Internet protocol (IP) address).

As per claim 15 and 34, Redlich teaches the undesirable pattern of behavior is too many ARP requests and wherein the monitoring includes verifying stability and lack of conflicts in an IP or MAC address mapping (Redlich: Column 18 Line 6 – 15).

As per claim 17 and 36, Redlich teaches the undesirable pattern of behavior is a simultaneous use of a network address, and wherein the proper action includes disabling any address associated to the network address that contradicts an address list in a network server or disabling any associated address that is not included in a list of addresses that are allowed to map to the network address (Redlich: Column 18 Line 6 – 15).

6. Claims 3 – 4 and 24 – 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bare (U.S. Patent 6389532), in view of Rodeheffer (U.S. Patent 5260945).

As per claim 3 and 24, Bare does not disclose expressly the dissemination through the network of packets associated with the undesirable behavior is prevented for a time period that is lengthened gradually as long as the undesirable behavior continues or intermittently reappears, the time period being gradually shortened if the undesirable behavior stops for a predetermined time.

Rodeheffer teaches the dissemination through the network of packets associated with the undesirable behavior is prevented for a time period that is lengthened gradually

Art Unit: 2131

as long as the undesirable behavior continues or intermittently reappears, the time period being gradually shortened if the undesirable behavior stops for a predetermined time (Rodeheffer: see for example, Column 1 Line 42 – 48, Column 2 Line 9 – 45, Column 3 Line 21 – 26 and Column 7 Line 1 – 42).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Rodeheffer within the system of Bare because (a) Bare teaches identifying the network undesirable behavior that may cause network failures and (b) Rodeheffer teaches providing for an optimized recovery time period of network failures that can minimize the disruption time based upon the information records of failure recovery history (Rodeheffer: see for example, Column 1 Line 13 – 16 and Column 2 Line 34 – 45).

As per claim 4 and 25, Bare as modified teaches the time period corresponds to a skepticism level that depends on a history of the undesirable pattern of behavior, a skepticism level zero (0) denoting a good history (Rodeheffer: see for example, Column 3 Line 20 – 26 and Column 5 Line 62 – 67).

7. Claims 5 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bare (U.S. Patent 6389532), in view of Bass et al. (U.S. Patent 6185185).

As per claim 5 and 26, Bare does not disclose expressly the undesirable pattern of behavior is characterized in that it matches behavior defined by a network administrator as notable or undesirable.

Bass teaches the undesirable pattern of behavior is characterized in that it matches behavior defined by a network administrator as notable or undesirable (Bass: see for example, Column 3 Line 45).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Bass within the system of Bare because (a) Bare teaches identifying the network undesirable behavior that may cause network failures and (b) Bass teaches an improvement mechanism in the prevention of broadcast traffic in computer networks (Bass: Column 2 Line 6 – 8).

8. Claims 21 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bare (U.S. Patent 6389532), in view of Rodeheffer (U.S. Patent 5260945), and in view of Singh (Patent Number: 6453430).

As per claim 21 and 40, Bare as modified teaches the time period becomes longer in a random exponential backoff before an attempt is made to allow resumption of the packets from any offending computer that originated the undesirable pattern of behavior, the time period becoming longer if the undesirable pattern of behavior reoccurs during a current backoff time, the time period becoming shorter if the

Art Unit: 2131

undesirable pattern of behavior disappears and does not reoccur in the current backoff time.

However, Bare as modified does not disclose expressly the recovery time can be associated with an exponential recovery time interval.

Singh teaches the recovery time can be associated with an exponential recovery time interval (Singh: see for example, Column 4 Line 40 – 47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Singh within the system of Bare as modified because Singh teaches providing significant advancements in fault management for recovery / restart sequence in a real-time or mission critical environments such as data communication networking devices or applications (Singh: see for example, Column 2 Line 32 – 39).

Accordingly, Bass as modified teaches the time period becomes longer in a random exponential backoff before an attempt is made to allow resumption of the packets from any offending computer that originated the undesirable pattern of behavior, the time period becoming longer if the undesirable pattern of behavior reoccurs during a current backoff time, the time period becoming shorter if the undesirable pattern of behavior disappears and does not reoccur in the current backoff time.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Longbit Chai whose telephone number is 571-272-3788. The examiner can normally be reached on Monday-Friday 8:00am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

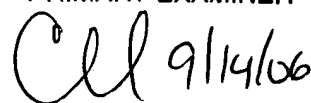
Art Unit: 2131

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
LBC

Longbit Chai  
Examiner  
Art Unit 2131

CHRISTOPHER REVAK  
PRIMARY EXAMINER

  
9/14/06